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(56) Documents cited
GB 2087535 A GB 2055188 A

(58) Field of search
UK CL (Edition L) F4W
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(54) Cooking top

(57) A cooking top comprises a ceramic sheet 1 under which there is at least one heat source comprising a gas burner member 18 of porous ceramic material connected, on the one side, with a feed duct 15 through which a gas-air mixture is fed, and, on the other side, with an exhaust gas discharge duct 19. Coupling the ceramic sheet 11 and a burner member of ceramic fibre or sponge allows the gas consumption and the exploitation of the combustion products to be optimized, with the exhaust gas residues being eliminated and the overall dimensions of said gas burner being minimized. Discharge ducts 19 associated with individual burners may communicate with a common outlet 20.

Fig. 2

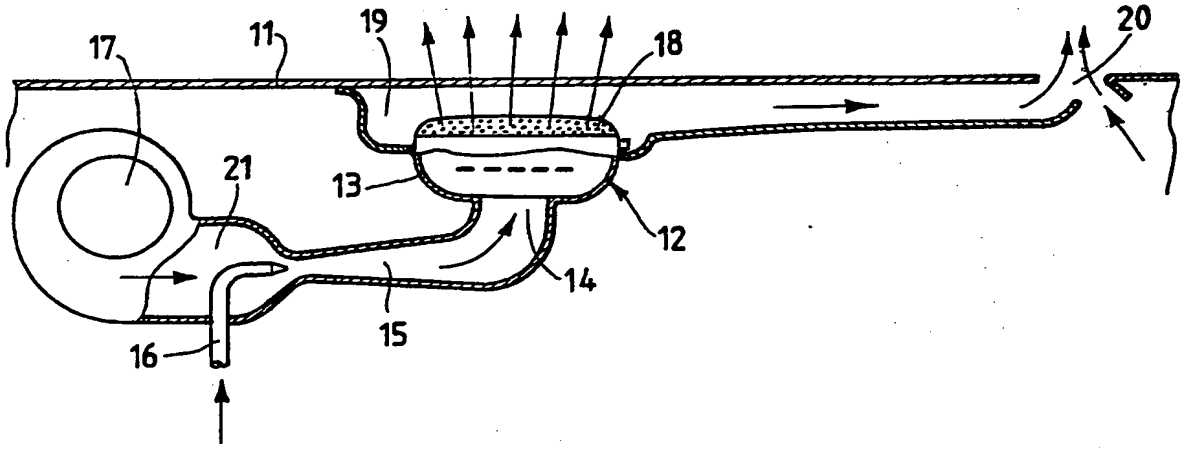

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Fig.1

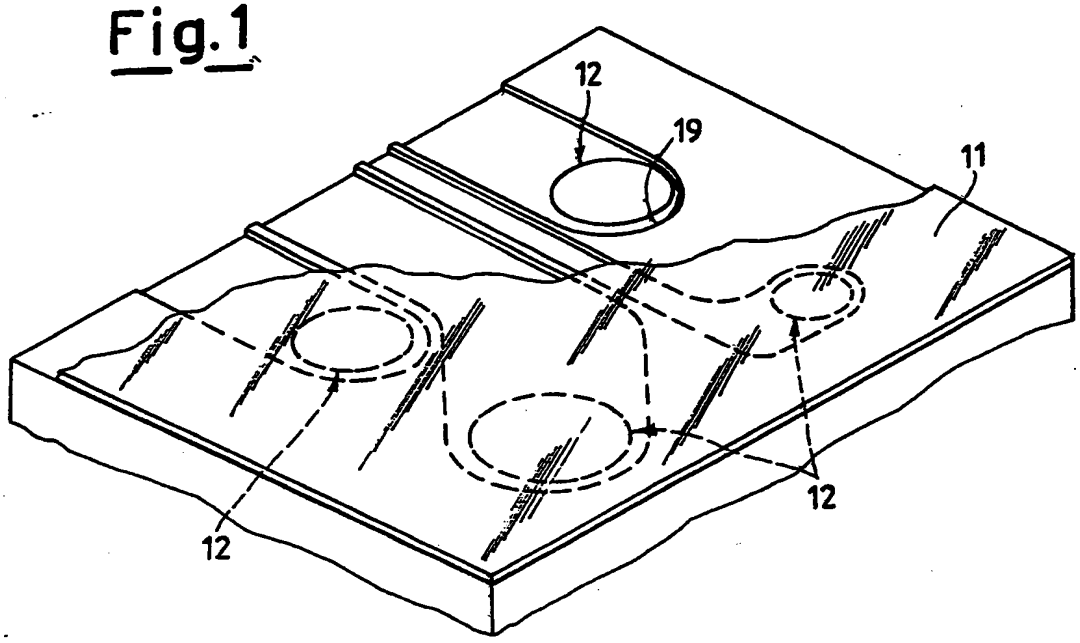
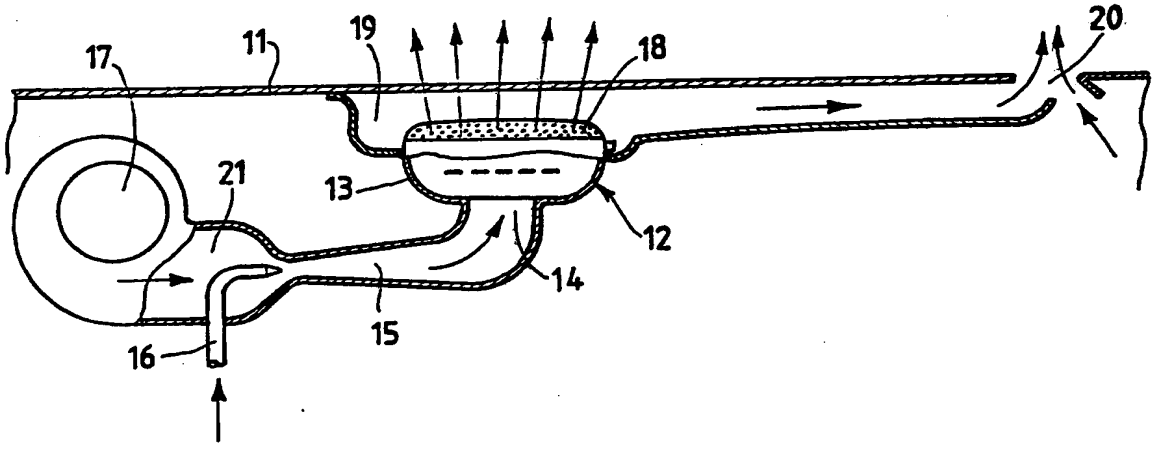


Fig.2



"HIGH YIELD, IMPROVED COMBUSTION COOKING TOP"

The present finding relates to a high-yield, improved combustion cooking top.

The cooking tops developed and put on the market during the last years essentially are constituted by a special glass, e.g., called "pyroceram", which acts as the support for cooking pots, or similar containers. Under said top of pyroceram, or the like, the heat sources are installed, which heretofore have essentially been constituted by electric resistors, other electrically fed heat sources, such as, e.g., halogen lamps, or gas burners.

In the first case, the electrically fed heat sources heat by irradiation the overhanging pyroceram sheet, viz. top, which is partially transparent to the received radiation, in particular to the infrared light. In that way, pots, or similar containers, resting on the cooking top, receive heat both by irradiation and by direct conduction through the contact with the same cooking top.

In the latter case, the gas fed heat sources are generally constituted by a block, of whatever shape, of refractory material, provided with a plurality of small holes through which the combustion gas flows. The surface of such a block is furthermore wavy, so as to be capable of undergoing overheating, with the heat amount emitted by irradiation being consequently increased.

Both said solutions proposed by the prior art do not take full advantage of the heating possibilities,

because they display heat dispersions, due to the overall dimensions of the burners, and to the incomplete conduction of the developed heat. Furthermore, in the case of the gas burners, an incorrect and incomplete combustion generates unburned residues which pollute the atmospheric air contained in the room in which the cooking top is installed.

The purpose of the present finding is of providing a cooking top which, by addressing all the problems connected with and caused by the presently known heat sources, maximizes the heat production and allows said heat to be nearly totally exploited.

This purpose according to the present finding is accomplished by providing a cooking top comprising a support surface under which there is installed at least one heat source, characterized in that said support surface is constituted by a sheet of pyroceram or the like, and said heat source comprises a burner of porous ceramic material connected, on the one side, with a feed duct through which a gas-air mixture is fed, and, on the other side, with an exhaust gas discharge duct.

The characteristics and advantages of the present finding will be clearer from the following disclosure, made by referring to the accompanying schematic drawings, in which:

Figure 1 shows a top perspective view of a cooking top according to the present finding, and

Figure 2 is a schematic sectional view showing a detail of one of the burners of the cooking top of Figure 1.

Figure 1 shows a cooking top according to the present finding, essentially comprising a support surface 11 under which a plurality of ceramic burners 12 are installed.

The support surface 11 is constituted by a pyroceram sheet, or a plate of a similar material, above which, in its positions corresponding to the so-said "fires", containers or pots to be heated are positioned.

Under each of these positions which define the positions of the fires, there is installed a ceramic burner 12, which is constituted by a hollow body 13. Said hollow body 13 is connected, on the one side, through an opening 14 provided through it, with a first end of a feed duct 15 through which a gas-air mixture is fed. Said gas-air mixture is fed, in a known way, by a gas duct 16 entering the duct 15 at a manifold-like enlarged portion 21 of the latter, coupled with a fan 17, provided at a second end of the duct 15.

Above the hollow body 13, there is provided a covering layer 18 made of a ceramic material or fibre, also having the form of a ceramic sponge with similar characteristics to the ceramic fibre, in order to provide a structure of network or porous type.

The upper portion of the hollow body 13 is inserted, in its turn, inside a manifold, or duct, 19, which is enlarged in order to occupy the surface area corresponding to said "fire" and extending towards an end discharge opening 20 suitable for receiving a whole set of manifolds or ducts 19 emerging from the

individual fires.

The ceramic burners 12, or, better, their covering layer 18, may have a thickness comprised within the range of from 2 to 15-20 mm, and through said layer the gas-air mixture is caused to flow in the suitable amount for the combustion to be complete.

Such a mixture gets ignited on the surface of the covering layer 18 and burns as an extremely thin surface layer. Under such operating conditions, a visible flame is not obtained, but the surface of the burners, which turns into a bright orange colour, transmits, by irradiation, a large portion of heat generated by the combustion.

The advantages of a cooking top according to the present finding result to be considerable.

In fact, a larger number of fires can be installed in the cooking top, because the ceramic fibre burners have even double or treble combustion intensities (watt/cm^2) as compared to those which can be obtained with the presently known and used gas burners. As a consequence, with the total amount of burnt gas being the same, combustion surfaces can be obtained which are from two to three times smaller than as presently used.

Thus, in a cooking top of standard size an at least double number of fires can be installed as compared to the presently provided number, with the capacity of the cooking top being increased.

Furthermore, a higher energy efficiency is obtained, because the higher temperatures possible with the ceramic fibre burners allow the heat amounts

exchanged by irradiation to be increased. The above results in a more effective heating of the containers placed on the cooking top because, as the burners have a small surface-area, they are completely covered by the relevant pot. This feature additionally prevents the heat dispersion which occurs in a burner having a larger diameter than of the container overhanging it.

All the above increases the energy efficiency, by reducing the necessary time for heating the containers and, consequently, their contents.

Finally, by means of a cooking top according to the present finding, a considerable improvement in the combustion is obtained with the quality of air, inside the premises in which the cooking top is installed, being consequently improved.

Finally, by means of a cooking top according to the present finding, a considerable improvement in the combustion is obtained with the quality of air, inside the premises or kitchen in which the cooking top is installed, being consequently improved.

The above, because the performance supplied by the burners of ceramic fibre, as well as of ceramic sponge, due to surface combustion, is excellent. If fact, the levels of carbon monoxide, of nitrogen oxides and of unburnt hydrocarbons are reduced, as compared to the burners of microperforated refractory materials. Such combustion characteristics make it also possible a continuous regulation of supplied power to be carried out.

Claims

1. Cooking top comprising a support surface under which there is installed at least one heat source, characterized in that said support surface is constituted by a sheet of pyroceram or the like, and said heat source comprises a burner of porous ceramic material connected, on the one side, with a feed duct through which a gas-air mixture is fed, and, on the other side, with an exhaust gas discharge duct.

2. Cooking top according to claim 1, characterized in that said burner comprises a hollow body above which a covering layer of porous ceramic material is superimposed, with said hollow body being connected with said feed duct for said gas-air mixture.

3. Cooking top according to claim 1 or 2, characterized in that said covering layer has a thickness comprised within the range of from 2 to 15-20 mm.

4. Cooking top according to any of the preceding claims, characterized in that said porous ceramic material is ceramic fibre or ceramic sponge having a network structure.

5. Cooking top according to claim 1, characterized in that with said pyroceram sheet a plurality of burners of porous ceramic material are coupled, the exhaust ducts of which are connected with a common opening leading to the outside, with feed ducts for a gas-air mixture being provided, which are connected with a manifold-like portion with which a fan and a gas feed duct are connected.

6. Cooking top as disclosed hereinabove and according to as illustrated in the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition L) F4W

(ii) Int Cl (Edition 5) F24C 15/10

Search Examiner
A N BENNETT

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search
2 SEPTEMBER 1993

Documents considered relevant following a search in respect of claims 1-3

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2087535 A (NIBELLE) see especially page 2, lines 5-24	1,3
X	GB 2055188 A (NIBELLE) see especially page 1, lines 3-16	1-3

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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